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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/088,162	03/15/2002	Takenori Narita	511.41485X00	2919

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EXAMINER

PENG, KUO LIANG

ART UNIT PAPER NUMBER

1712

DATE MAILED: 05/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/088,162

Applicant(s)

NARITA ET AL.

Examiner

Kuo-Liang Peng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/15/02 Preliminary amendment.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☒ Other: See Continuation Sheet.

Continuation of Attachment(s) 6). Other: English translations of JP 10-158012, JP 11-217458 and JP 05-294609.

DETAILED ACTION

1. The Applicants' preliminary amendment filed on March 15, 2002 was received. Claims 15-16 are amended. Claims 24-53 are added.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3 and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Yokotsuka (US 5 905 117).

Yokotsuka discloses a composition comprising a) a resin having functional groups and being soluble in a solvent, and b) a partially hydrolyzed condensate of alkoxysilanes (col. 2, line 60 to col. 3, line 3). Note that any resin which is organic in nature is inherently thermally decomposable above certain temperature in certain atmosphere (e.g., oxygen containing atmosphere). It is further noted that the composition can be used in a spin coating process on a substrate (col. 13, lines 21-36). The partially hydrolyzed condensate of alkoxysilanes is soluble in the solvent which the resin is soluble in because the composition for a spin coating process must be a homogeneous solution, otherwise, the insoluble material will be forced to move toward to the edge of the substrate (e.g., the effect of centrifuge or sedimentation), and an even coating can not be obtained.

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4. Claims 1-3, 8-10, 15-16, 18-19, 21-22, 25-29, 31, 34-35, 37-38, 40, 43, 45, 46-49 and 50-52 are rejected under 35 U.S.C. 102(b) as being anticipated by Ioka (JP 10-158012).

With respect to Claims 1-3 and 8-10, Ioka discloses a composition comprising a) a thermally decomposable polymer and b) an alkoxysilane. Both are dissolved in a solvent ([0006]). Alkoxysilanes with or without non-hydrolyzable group can be used ([0008]). The alkoxysilanes are partially hydrolyzed/condensed in situ ([0007]). Therefore, Ioka's composition does contain a siloxane oligomer.

With respect to Claims 15-16, 18-19, 21-22, 26-29, 35, 37-38, 40, 46-47 and 50-51, Ioka further discloses a low-permittivity film formed by applying the composition onto a substrate to form a film, heating the resulting film to condense the siloxane oligomer at a temperature below 100°C, finally, removing the thermally decomposable polymer at a temperature of 600°C ([0015], [0017], [0019], [0020] and [0024]). Ioka further teaches an LSI multiplayer having an insulator layer prepared by the low-permittivity film ([0026]).

With respect to Claims 25, 31, 34, 43, 45, 48-49 and 52, it is further noted that after the thermally decomposable polymer is removed, the resulting film contains only a material derived from the alkoxysilane oligomer. As such, there is no difference between the resulting low-permittivity film or the electronic part containing this film and Applicants' low-permittivity film or electronic part containing the low-permittivity film. The weight loss characteristics of the thermally decomposable polymer are irreverent.

5. Claims 1-3, 8-10, 15-23, 26-29, 35-40, 44, 46-47, 50-51 and 53 are rejected under 35 U.S.C. 102(b) as being anticipated by Harita (JP 11-217458).

Narita discloses a composition comprising a thermally decomposable polymer, a siloxane oligomer and a solvent for both materials. The siloxane oligomer can be a hydrolytic condensation product of formula (I) which can contain non-hydrolyzable group ([0010]). The composition can be used for preparing porous films having low permittivity ([0012]). The porous films can be used for preparing electronic parts ([0102]). The siloxane oligomer can be crosslinked at a temperature of 80 to 250°C ([0088]). Later, the thermally decomposable polymer can be removed at 420°C ([0110]).

6. Claims 4-7, 11-14, 24-25, 30-34, 41-43, 45, 48-49 and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Harita as evidenced by Numata (US 6 150 446).

Narita discloses a composition comprising a thermally decomposable polymer, a siloxane oligomer and a solvent for both materials as described in paragraph 5, which is incorporated herein by reference.

Narita further teaches the use of acryl resins which are fluorine-free ([0039]). Furthermore, Numata teaches that the acryl resin is a methacrylate polymer or an acrylate polymer (col. 4, line 34). Since the Narita's acryl resin reads on the methacrylate polymer or acrylate polymer set forth in the present invention, it inherently possesses the weight loss characteristics set forth in the present invention. See MPEP 2112.01. Normally, only one reference should be used in making a rejection under 35 U.S.C. 102. However, a 35 U.S.C. 102 rejection over multiple references has been held to be proper when extra references are cited to A) Prove the primary reference contains an "enabled disclosure"; B) Explain the meaning of a term used in the primary reference; or C) Show that a characteristic not disclosed in the reference

is inherent. See MPEP 2131.01. In this instance, Numata is cited here only for the purpose of showing that an acryl resin is a methacrylate polymer or an acrylate polymer.

7. Claims 1-3, 8-10, 15-16, 18-19, 25-29, 31, 34-35, 37-38, 40 and 43 are rejected under 35 U.S.C. 102(b) as being anticipated by Imai (JP 05-294609) as evidenced by Hedrick (US 5 700 844).

With respect to Claims 1-3, 8-10, 15-16, 18-19, 26-29, 35, 37-38 and 40, Imai discloses a composition comprising an amine salt of an aromatic polyamide acid, a partially condensate of silicone alkoxide, and an alcohol as solvent. The composition is used for casting into a film which is heated below the decomposition of the film to form a polyimide-silica composite film. Later, the composite film is further heated at a temperature higher than the decomposition temperature of the polyimide to form a porous silica film ([0007]). The silicone alkoxide can include silicone tetraalkoxide or those silicone alkoxides containing non-hydrolyzable organic group such as TEOS, methyltriethoxysilane, etc. ([0031]). The porosity of the silica film is generally below 1 μm ([0007]). Hedrick teaches that a porous silica film has a low permittivity (col. 2, lines 37-48). Therefore, Imai's porous silica film is a low permittivity film. Normally, only one reference should be used in making a rejection under 35 U.S.C. 102. However, a 35 U.S.C. 102 rejection over multiple references has been held to be proper when extra references are cited to A) Prove the primary reference contains an "enabled disclosure"; B) Explain the meaning of a term used in the primary reference; or C) Show that a characteristic not disclosed in the reference is inherent. See MPEP 2131.01. In this instance, Hedrick is cited here only for the purpose of showing that a porous silica film is a low-permittivity film.

With respect to Claims 25, 31, 34 and 43, it is further noted that after the polyimide derived from the amine salt of an aromatic polyamide acid is removed, the resulting film contains only a material derived from the partially condensate of silicone alkoxide. As such, there is no difference between the resulting low-permittivity film and Applicants' low-permittivity film. The weight loss characteristics of the thermally decomposable polymer are irreverent.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 20, 23, 44 and 53 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ioka (JP 10-158012).

Ioka discloses a low-permittivity film and an electronic part comprising the film as described in paragraph 4, which is incorporated herein by reference. It is noted that Ioka's process of making the film is similar to Applicants' process. Furthermore, the instant claims are product-by-process claims. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even

though the prior product was made by a different process” In re Thorpe, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). "The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature" than when a product is claimed in the conventional fashion. In re Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983) "[T]he lack of physical description in a product-by-process claim makes determination of the patentability of the claim more difficult, since in spite of the fact that the claim may recite only process limitations, it is the patentability of the product claimed and not of the recited process steps which must be established. We are therefore of the opinion that when the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claimed in a product-by-process claim, a rejection based alternatively on either section 102 or section 103 of the statute is eminently fair and acceptable. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith." In re Brown, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

10. Claims 18, 19, 20, 21, 22, 23, 29, 40, 44, 46, 50 and 53 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hedrick (US 5 700 844).

Hedrick discloses a film prepared by mixing a thermally decomposable polymer and a siloxane oligomer, curing the siloxane oligomer, and removing the thermally decomposable polymer. The thermally decomposable polymer can be polymethyl methacrylate (col. 1, line 56 to col. 2, line 36 and Example 2). The film has low permittivity and can be used in electronic devices (col. 2, lines 37-48). It is noted that Hedrick's process of making the film is similar to Applicant's process. Furthermore, the instant claims are product-by-process claims. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process" In re Thorpe, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). "The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature" than when a product is claimed in the conventional fashion. In re Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983) "[T]he lack of physical description in a product-by-

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11. Claims 20 and 44 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Imai as evidenced by Hedrick.

Imai as evidenced by Hedrick discloses a low-permittivity film prepared by coating a solution of a amine salt of an aromatic polyamide acid and an alcohol as solvent as described in paragraph 7, which is incorporated herein by reference. It is noted that Imai's process of making the film is similar to Applicant's process. Furthermore, the instant claims are product-by-process claims. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process" *In re Thorpe*, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). "The Patent Office bears a lesser burden of proof in making out a case of

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12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kuo-Liang Peng whose telephone number is (703) 306-5550. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Dawson, can be reached on (703) 308-2340. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Kuo-Liang Peng

May 8, 2003

A handwritten signature in black ink, appearing to read 'Kuo-Liang Peng', is written over the typed name and date.